

## CLAIMS

1. An authentication apparatus comprising a body, and a partner side paired with the body, the  
5 apparatus comprising: a random pulse generator, arranged in the body or the partner side, or in both the body and the partner side, which generates random pulses; a means which outputs authentication data based on the random pulses generated by the random  
10 pulse generator; a means which stores authentication data, a communication means which transmits/receives authentication data; and a control means which controls the communication of authentication data and collates authentication data.
- 15 2. An authentication apparatus according to claim 1, characterized in that the control means receives authentication data stored in the storage means arranged on the partner side, collates the received authentication data with authentication data  
20 of the storage means arranged in the body, and in accordance with the result of collation, authenticates the partner side, and in that upon completion of the authentication, authentication data is updated, and new authentication data thus updated  
25 is written in the storage means of the body and the partner side.
3. An authentication apparatus according to

claim 1 or 2, further comprising a drive unit control means which controls a drive unit in accordance with the result of collation by the control means.

4. An authentication apparatus according to  
5 claim 1 or 2, characterized in that the body is the body of an electronic lock, and the partner side is a key.

5. An authentication apparatus according to  
claim 1 or 2, characterized in that the random pulse  
10 generator detects the  $\alpha$  particles, the beta ray or the gamma ray released by the collapse of the atomic nucleus and generates random pulses.

6. An authentication apparatus according to  
claim 5, characterized in that  $^{241}\text{Am}$ ,  $^{210}\text{Pb}-^{210}\text{Po}$ ,  $^{210}\text{Po}$ ,  
15  $^{244}\text{Cm}$ , or the like is used as an  $\alpha$  particle radiator, and  $^{210}\text{Pb}$ , or the like as a beta ray radiator.

7. An authentication apparatus according to  
claim 1 or 2, characterized in that the random pulse  
generator detects thermal electrons, noises or  
20 jitters or receives a radio wave (RF) and generates random pulses.

8. An authentication apparatus according to  
claim 1 or 2, characterized in that the communication  
means transmits/receives the authentication data by  
25 circuit connection due to contact or by infrared light communication or radio communication.

9. An authentication method comprising the

steps of: generating random pulses by a random pulse generator arranged in a body or a partner side paired with the body, or in both the body and the partner side; outputting authentication data based on the 5 random pulses generated by the random pulse generator; storing authentication data; transmitting/receiving authentication data; and controlling the communication of authentication data and collating authentication data.

10        10. An authentication method according to claim 9, characterized in that the control step receives the authentication data stored in a storage means arranged on the partner side, collates the received authentication data with authentication data of a 15 storage means arranged in the body, authenticates the partner side in accordance with the result of collation, and after completion of authentication, updates authentication data, and writes new authentication data thus updated in the storage means 20 of the body and the partner side.

11. An authentication method according to claim 9 or 10, further comprising a drive unit control step for controlling a drive unit in accordance with the result of collation in the control step.

25        12. An authentication method according to claim 9 or 10, characterized in that the random pulse generator detects the  $\alpha$  particles, the beta ray or

the gamma ray released by the collapse of the atomic nucleus and generates random pulses.

13. An authentication method according to claim 12, characterized in that  $^{241}\text{Am}$ ,  $^{210}\text{Pb}-^{210}\text{Po}$ ,  $^{210}\text{Po}$ ,  $^{244}\text{Cm}$ , 5 or the like is used as an  $\alpha$  particle radiator, and  $^{210}\text{Pb}$ , or the like as a beta ray radiator.

14. An authentication method according to claim 9 or 10, characterized in that the random pulse generator detects thermal electrons, noises or 10 jitters or receives a radio wave (RF) and generates random pulses.

15. An authentication method according to claim 9 or 10, characterized in that the communication step transmits and receives the authentication data by 15 circuit connection due to contact or by infrared light communication or radio communication.

16. An authentication apparatus according to claim 1 or 2, characterized in that the body or the partner side includes the hardware of a computer, and 20 the partner side or the body including the random pulse generator is mounted integrally with or independently of the hardware of the computer.

17. An authentication method according to claim 9 or 10, characterized in that the body or the 25 partner side includes the hardware of a computer, and the partner side or the body including the random pulse generator is mounted integrally with or

independently of the hardware of the computer.

18. An authentication program comprising: a code to generate random pulses from a random pulse generator arranged in a body or a partner side paired 5 with the body, or in both the body and the partner side partner side; a code to output authentication data based on the random pulses generated by the random pulse generator; a code to store authentication data; a code to transmit/receive 10 authentication data; and a code to control the communication of authentication data and collate authentication data.

19. An authentication program according to claim 18, characterized in that the code to control 15 the communication of authentication data and collate authentication data includes: a code to receive authentication data stored in a storage means arranged on the partner side; a code to collate the received authentication data with authentication data 20 of a storage means arranged in the body; a code to authenticate the partner side in accordance with the result of collation; a code to update authentication data after completion of the authentication; and a code to write new authentication data thus updated in 25 the storage means of the body and the partner side.